



## MARINE FISH CESTODE PARASITE

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### ABSTRACT:

*Cestoda* is a class of parasitic worms in the flatworm (*Platyhelminthes*) phylum, commonly known as tapeworms. The best-known species, in the subclass *Eucestoda*, are ribbonlike worms as adults. Their bodies consist of many similar units, known as proglottids, which are essentially packages of eggs and which are regularly shed into the environment to infect other organisms.

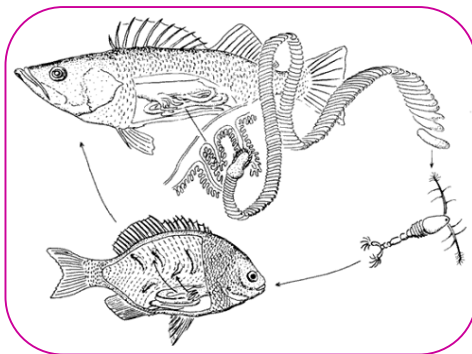
**KEYWORDS:** class of parasitic, complex life histories.

### INTRODUCTION:

All cestodes are parasitic and many have complex life histories, including a stage in a definitive (main) host in which the adults grow and reproduce, and one or two intermediate stages in which the larvae develop in other hosts. For example, *Diphyllobothrium* has at least two intermediate hosts, a crustacean and then one or more freshwater fish; its definitive host is a mammal. Some tapeworms are host-specific, while others are parasites of a wide variety of hosts. Over a thousand species have been described; probably all vertebrates can host at least one species of tapeworm.

The adult worm has a scolex, or head, a short neck and a strobila, or segmented body formed of proglottids. Tapeworms anchor themselves to the inside of the intestine of their host using their scolex, which typically has hooks, suckers, or both. They have no mouth, but absorb nutrients directly from the host's gut. The neck continually produces proglottids, each one containing a reproductive tract; mature proglottids are full of eggs, and fall off to leave the host, either passively in the faeces or actively moving. All tapeworms are hermaphrodites, with each individual having both male and female reproductive organs.

Humans are subject to infection by several species of tapeworms if they eat undercooked meat such as pork (*Taenia solium*), beef (*T. saginata*), and fish (*Diphyllobothrium*), or if they live in, or eat food prepared in, conditions of poor hygiene (*Hymenolepis* or *Echinococcus* species). Around 1900, tapeworm eggs were marketed as a means of slimming.



### MORPHOLOGY

This part deals with the morphology of cestode parasites from marine water fishes from order *Cary-ophyllidea*, *Pseudophyllidea*, *Tetraphyllidea* and *Lecanicephallidea*. The specimen of the cestodes described in this work are belonging to live families viz. *Lytocestidae*, *Ptychobothridae*, *Lecanicephalidae*, *Tetraphyllidae* and *Tetragonocephalidae*. The *Ptychopteridae*, phantom crane flies, are a small family (three extant genera) of nematocerous Diptera. Superficially similar in appearance to other "tipuloid" families, they lack the ocelli of the *Trichoceridae*,

the five-branched radial vein of the Tanyderidae, and the two anal veins that reach the wing margins of the Tipulidae. They are usually allied with the Tanyderidae based on similarities of the mesonotal suture, this group being called the Ptychopteromorpha.

### Diversity and habitat

All 6000 species of Cestoda are intestinal parasites; their definitive hosts are vertebrates, both terrestrial and marine, while their intermediate hosts include insects, crustaceans, molluscs, and annelids as well as other vertebrates.

*T. saginata*, the hamburger tapeworm, can grow up to 20 m (65 ft); the biggest species, the whale tapeworm *Tetragonoporus calyptocephalus*, can develop to more than 30 m (100 ft). Species with little has have a tendency to be little. For instance, vole and lemming tapeworms are just 13– 240 mm (0.5– 9.4 in) long, and those parasitizing wenchens just 0.8– 60 mm (0.03– 2.36 in).]]

### Anatomy

The body shape is basic, with a scolex, or head, adjusted for connection to the complete host, a short neck, and a strobila, or portioned trunk framed of proglottids, which makes up the worm's body. The creature has no gut and retains supplements from the host's nutritious tract through its neodermis, or fingernail skin. Gas trade happens through the neodermis, which likewise shields the tapeworm from its host's stomach related proteins.

### Scolex

The scolex, which joins to the digestive tract of the authoritative host, is frequently minute in correlation with the proglottids. It is commonly a four-sided handle, equipped with suckers or snares or both. In a few animal varieties, the scolex is overpowered by bothria, or "sucking grooves" that limit like suction mugs. Cyclophyllid cestodes can be perceived by the closeness of four suckers on their scolices. Diverse species have agitated or leaflike scolices, and there may be distinctive structures to encourage association.



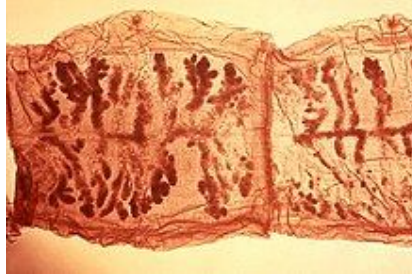
### Body systems

Round and longitudinal muscles lie under the neodermis, underneath which promote longitudinal, dorso-ventral and transverse muscles encompass the focal parenchyma. Protonephridial cells deplete into the parenchyma. There are four longitudinal gathering channels, two dorso-horizontal and two ventro-sidelong, running along the length of the worm, with a transverse waterway connecting the ventral ones at the back of each fragment. At the point when the proglottids start to disengage, these trenches open to the outside through the terminal portion.

The primary operational hub of a cestode is a cerebral ganglion in its scolex. Nerves radiate from the ganglion to supply the general body strong and tactile completion, with two horizontal nerve lines running the length of the strobila.

### Proglottids

When anchored to the host's intestinal divider, tapeworms assimilate supplements through their surface as the nourishment being processed by the host streams past it. Cestodes can't incorporate lipids and are completely reliant on their host, in spite of the fact that lipids are not utilized as a vitality save, but rather for generation.



The body is made out of a progression of sections called proglottids. These are created from the neck by mitotic development which is trailed by transverse narrowing. The fragments end up bigger and more develop as they are dislodged in reverse by more current sections. Each proglottid contains a free regenerative tract, and like some different flatworms, cestodes utilize fire cells (protonephridia), situated in the proglottids, for discharge. The total of the proglottids is known as a strobila, which is thin, and takes after a segment of tape, and from this is determined the regular name "tapeworm". Proglottids are persistently being delivered by the neck district of the scolex, as long as the scolex is connected and alive.

Develop proglottids are basically packs of eggs, every one of which is infective to the correct middle of the road have. They are discharged and leave the host in dung, or move outwards as autonomous motile proglottids. The quantity of proglottids framing the tapeworm ranges from three to four thousand.

### Reproduction

Genuine tapeworms are only bisexuals, with both male and female conceptive frameworks in their bodies. The regular outside opening for both male and female regenerative frameworks is known as the genital pore, which is arranged at the surface opening of the glass formed chamber. Despite the fact that they are sexually bisexual and cross-preparation is simply the standard, treatment at times happens and makes conceivable the propagation of a worm when it is the main individual in its host's gut. Amid sexual intercourse, the cirri of one individual interface with those of the other through the genital pore, and afterward spermatozoa are traded.

### Lifecycle

Tapeworms are intestinal parasites of vertebrates, with every tapeworm species tainting a solitary authoritative host or gathering of firmly related host species. The complete host is dependably a vertebrate yet in about all cases, at least one halfway has are engaged with the lifecycle, commonly arthropods or different vertebrates. No agamic stages happen in the lifecycle, as they do in different flatworms, yet the lifecycle design has been a critical measure for surveying development among Platyhelminthes.

Numerous tapeworms have a two-stage lifecycle with two sorts of hosts. This creature at that point turns into a middle of the road have, the oncosphere drills through the gut divider and relocates to different parts of the body, for example, the muscle. Here it encysts, framing a cysticercus. The parasite finishes its lifecycle when the middle host passes on the parasite to the complete host, as a rule when the conclusive host eats polluted parts of the halfway host, for instance a human eating crude or undercooked meat. Another two-stage lifecycle is displayed by *Anoplocephala perfoliata*, the authoritative host being an equine and the transitional host an oribatid vermin.

*Diphyllobothrium* displays a more unpredictable, three-stage lifecycle. On the off chance that the eggs are laid in water, they form into free-swimming oncosphere hatchlings. After ingestion by an appropriate freshwater scavenger, for example, a copepod, the principal moderate host, they form into proceroid hatchlings. At the point when the copepod is eaten by an appropriate second middle of the road have, ordinarily a minnow or other little freshwater angle, the proceroid hatchlings move into the fish's tissue where they form into plerocercoid hatchlings. These are the infective stage for the mammalian complete host. On the off chance that the little fish are eaten by a savage fish, its muscles also can end up contaminated.

*Schistocephalus solidus* is another three-stage illustration. The moderate hosts are copepods and little fish, and the authoritative hosts are waterbirds. This species has been utilized to exhibit that cross-preparation creates a higher infective achievement rate than self-treatment.

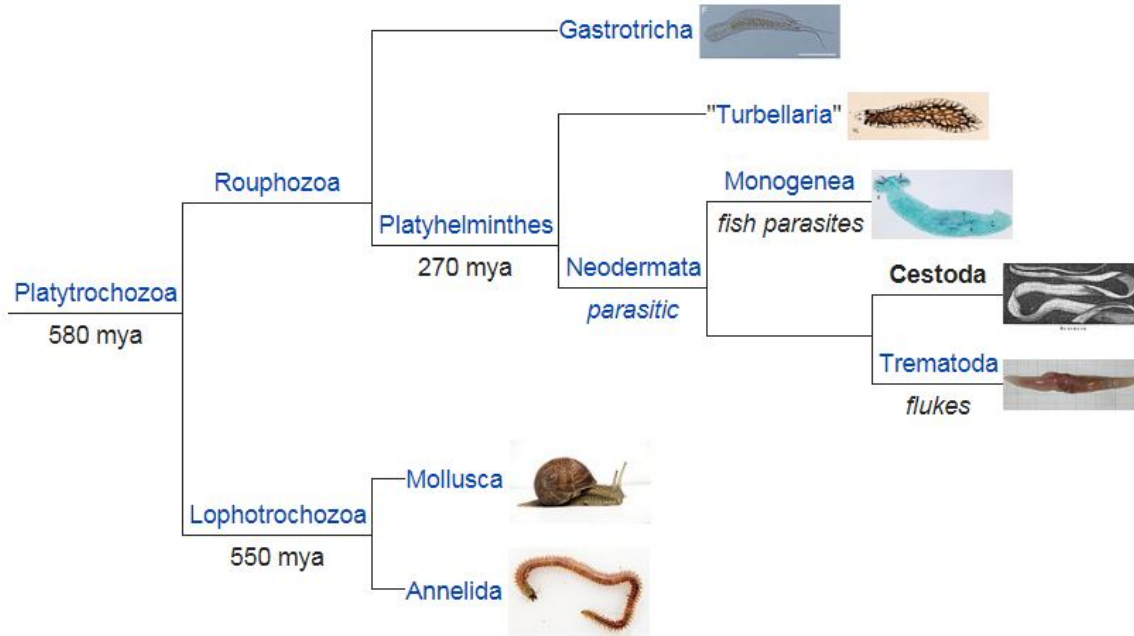
## Evolution and phylogeny

### Fossil history

Parasite fossils are uncommon, however conspicuous groups of cestode eggs, some with an operculum (top) showing that they had not emitted, one with a creeping hatchling, have been found in fossil shark coprolites dating to the Permian, somewhere in the range of 270 million years back.

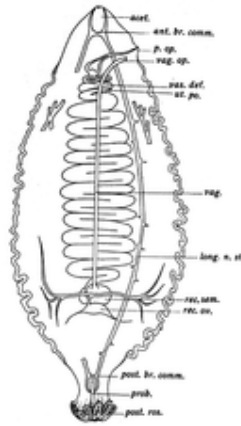
### External

The situation of the Cestoda inside the Platyhelminthes and other Spiralian phyla in view of genomic investigation is appeared in the phylogenetic tree. The non-parasitic flatworms, customarily assembled as the "Turbellaria", are paraphyletic, as the parasitic Neodermata including the Cestoda emerged inside that gathering. The surmised times when real gatherings initially showed up is appeared in a huge number of years back.

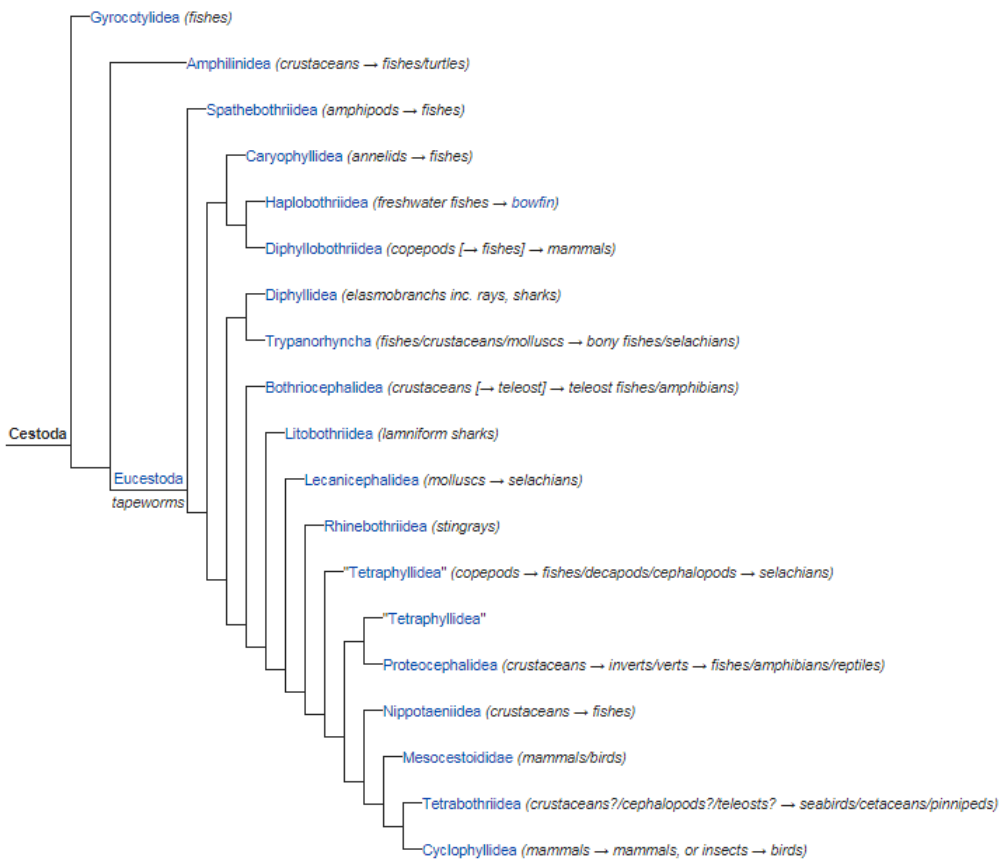


### Internal

The evolutionary history of the Cestoda has been contemplated utilizing ribosomal RNA, mitochondrial and other DNA, and morphological examination and keeps on being updated. "Tetraphyllidea" apparently is paraphyletic; "Pseudophyllidea" has been separated into two requests, Bothriocephalidea and Diphyllbothriidea. [ Hosts, whose phylogeny frequently reflects that of the parasites (Fahrenholz's manage), are demonstrated in italics and brackets, the life-cycle grouping (where referred to) appeared by bolts as (middle host1 [→ transitional host2 ] → conclusive host). Choices, for the most part for various species inside a request, are appeared in square sections.



**Gyrocotylidea: body flatwormlike, not divided into proglottids**



The Taeniidae, including species such as the pork tapeworm and the beef tapeworm that often infect humans, may be the most basal of the 12 orders of the Cyclophyllidea

**Interactions with humans**

**In culture**

In ancient Greece, the comic playwright Aristophanes called tapeworms "hailstones". In Medieval circumstances, in The Canon of Medicine, finished in 1025, the Persian doctor Avicenna recorded parasites including tapeworms. In the Early Modern time frame, Francesco Redi depicted and outlined numerous parasites, and was the first to name the growths of Echinococcus granulosus found in mutts and sheep as

parasitic; after a century, in 1766, Peter Simon Pallas accurately proposed that these were the hatchlings of tapeworms.

Subside Marren and Richard Mabey in *Bugs Britannica* compose that Irvine Welsh's sociopathic policeman in his 1998 novel *Filth* possesses a talking tapeworm, which they call "the most appealing character in the novel"; it turns into the policeman's adjust personality and better self.

Around 1900, tapeworm eggs were promoted to the general population as thinning tablets. A full-page shaded commercial in a ladies' magazine of that period claims "Fat: the foe. that is ousted! How? With sterilized tape worms. Jug stuffed. No evil impacts!" Tapeworm disease can make individuals end up slimmer, however reactions incorporate fart, looseness of the bowels, stoppage, and "rectal fluttering". [2] Dieters still now and then hazard deliberate contamination to wind up thin, prove by a 2013 cautioning on American TV.

### Infection and treatment

Like other species of mammal, humans can become infected with tapeworms. There may be few or no symptoms, and the first indication of the infection may be the presence of one or more proglottids in the stools. The proglottids appear as flat, rectangular, whitish objects about the size of a grain of rice, which may change size or move about. Bodily symptoms which are sometimes present include abdominal pain, nausea, diarrhoea, increased appetite and weight loss.

There are several classes of anthelmintic drugs, some effective against many kinds of parasite, others more specific; these can be used both preventatively and to treat infections. While accidental tapeworm infections in developed countries are quite rare, such infections are more likely to occur in countries with poor sanitation facilities or where food hygiene standards are low.

### CONCLUSION

All cestodes are parasitic and numerous have complex life accounts, incorporating a phase in an authoritative host in which the grown-ups develop and replicate, and maybe a couple middle of the road arranges in which the hatchlings create in different hosts. Each of the 6000 types of Cestoda are intestinal parasites; their conclusive hosts are vertebrates, both earthbound and marine, while their halfway has incorporate creepy crawlies, shellfish, molluscs, and annelids and different vertebrates.

Tapeworms are intestinal parasites of vertebrates, with every tapeworm species contaminating a solitary complete host or gathering of firmly related host species. The conclusive host is dependably a vertebrate yet in about all cases, at least one middle of the road has are engaged with the lifecycle, regularly arthropods or different vertebrates. The parasite finishes its lifecycle when the moderate host passes on the parasite to the conclusive host, for the most part when the complete host eats debased parts of the halfway host, for instance a human eating crude or undercooked meat.

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